

Burn Education Guide

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Introduction.....	2
Information About the Skin and Burn Injuries	3
Meet the Burn Team	5
Burn Wound Care	6
How Is Your Burn Wound Treated in the Hospital?	6
Surgical Debridement, Grafting, and Donor Sites	7
Burn Wound Care After You Leave the Hospital.....	8
Common Concerns.....	11
Follow-up Care	12
Rehabilitation.....	12
Range of Motion Stretching.....	13
Positioning	14
Splints	15
Scar Management.....	15
Movement	15
Activities of Daily Living (ADL)	16
Pediatric Burn Rehabilitation.....	16
Nutrition.....	16
Pain Control	17
Itching	18
Emotional Adjustment	18
Notes	21
Glossary of Equipment and Terms Used in Burn Care.....	26
How Kids Hear Hospital Words	30

Introduction

When you or a loved one is brought to the hospital with a burn, we know that you may have many emotions, such as fear and anxiety. While this is a hard time for everyone, it is good to know that Bronson Methodist Hospital has provided burn care services in southwest Michigan for over 30 years. It is our goal to make your stay at Bronson as comfortable as possible.

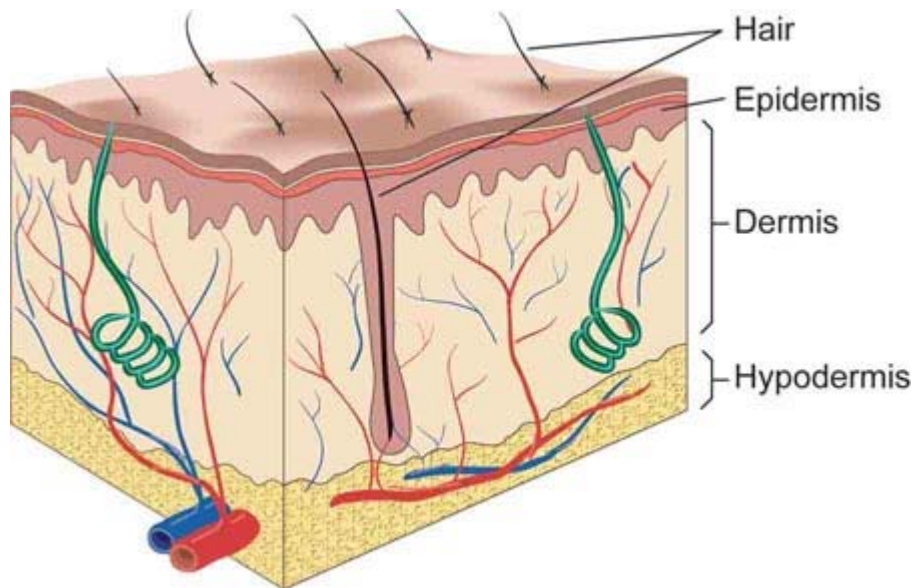
Knowing what to expect can help ease these feelings. Patients with burn injuries are either admitted to the hospital or come to the burn clinic. Adult patients who stay in the hospital are admitted to the Surgical Intensive Care Unit (SICU). The SICU is a 20-bed unit located on the first floor of the south campus. Children are admitted to the Pediatric Intensive Care Unit (PICU). The PICU has eight beds and is located on the third floor of the south campus. Outpatient burn care is provided at the Acute Burn and Wound Clinic, which is on the fourth floor of the Medical Office Pavilion. Outpatient rehabilitation is located on the first floor of the south campus in room East-151.

We use a team approach to meet your recovery needs. The team includes:

- You and your family
- Doctors and nurses
- Registered dietitians, physical and occupational therapists
- Pharmacists, speech and language pathologists
- Respiratory therapists, medical social workers, case managers, chaplains and child life specialists.

Recovery is a journey. Burn survivors face many challenges in the weeks, months and years to come. We hope this booklet will be informative and helpful to you. If you have any questions along the way, please feel free to ask any of the burn team staff.

Information About the Skin and Burn Injuries



Your skin is the largest organ of your body. There are two layers, the epidermis and the dermis. The skin acts as a barrier against infection. It prevents loss of body fluids, regulates body temperature and serves a cosmetic effect. The skin's network of nerves gives it the ability to feel sensations and pain.

A burn is damage to the skin or tissues caused by heat, chemicals, electricity, sunlight, or radiation. The depth or degree of burn depends on which layers of skin are damaged or destroyed.

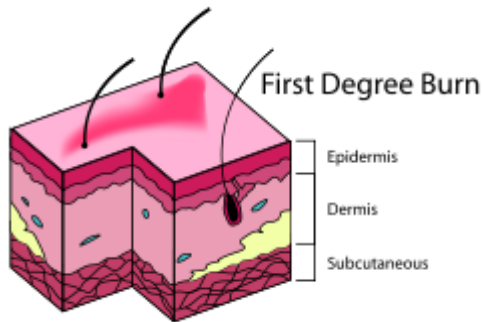
Why Are Patients Admitted to the Hospital?

Patients come to the hospital for care of their wounds and for pain control. The severity of the skin injury depends on many things:

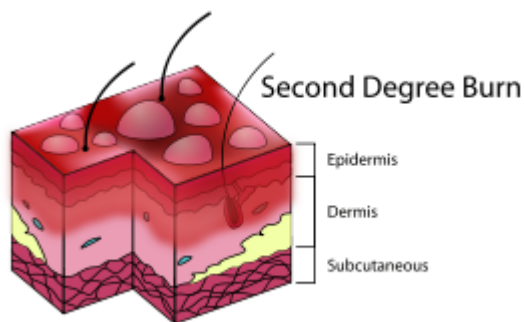
- the size of the injury
- the depth of the burn wound
- the parts of the body burned
- age of the patient
- past medical history and presence of other injuries

There are three depths to a burn wound:

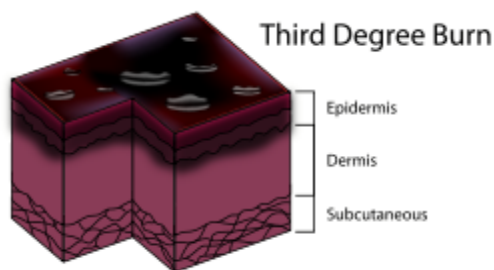
- **Superficial (First degree):** First-degree burn wounds are closest to the surface and least serious. These burns look reddened and are painful but will heal on their own.



- **Partial Thickness (Second degree):** These burns are deeper and more serious. This type of burn can be superficial partial thickness or deep partial thickness. Superficial partial thickness burns appear red and moist with blisters. They are very painful. These burns usually heal by themselves. Deep partial thickness burns are often pale pink to white. They may need skin grafting to improve function or to prevent excessive scarring.



- **Full Thickness (Third degree):** This is the deepest burn through the skin. The skin has been too deeply damaged to heal itself. A full thickness burn appears dry and leathery and may be white, yellow or brown in color. Skin grafting will be needed to close this type of wound.



Meet the Burn Team

- **Patient and Family:** You and your family are key members of the burn team at Bronson. You will help set goals for your care. In the early stages of your treatment, you can depend on the team for all care. You and your family can talk openly with the staff. The team will work together throughout the hospital stay and your transition home.
- **Burn Surgeon:** A burn surgeon will manage treatment of the burn. The burn surgeon is specially trained in burn care, wound care, skin grafting and plastic surgery.
- **Trauma Intensive Care Doctors:** Trauma intensive care doctors are specially trained to care for the needs of critically ill adults. They work with the burn surgeons and other specialists to manage the care of the burn patient.
- **Pediatric Intensive Care Doctors:** Pediatric intensive care doctors are specially trained to care for the needs of critically ill children. They work with the burn surgeons and other specialists to manage care of the burn patient on the PICU.
- **Nurses:** The registered nurse (RN) will be with you for the longest period of time each day. The nurse is skilled in all areas of burn care, including critical care, Advanced Burn Life Support, dressing changes and pain control. The nurse will work to coordinate your care throughout the hospital stay. The patient care assistant (PCA) helps the nurse to care for you.
- **Occupational and Physical Therapists:** Occupational and physical therapists work with you to preserve function of burned areas. They help with body movement and positioning in the hospital and after you go home. They will provide splints when needed. Therapists develop plans for daily living, home exercise programs, and rehabilitation activities.
- **Speech and Language Pathologist:** Speech and language pathologists evaluate and treat swallowing. They can help to prevent contractures and scarring of muscles in the face and mouth. They also assess and manage vocal cord function and can help with communication needs if you cannot speak.
- **Registered Dietitian:** The registered dietitian (RD) develops a nutrition care plan to promote wound healing and reduce loss of muscle mass. This plan may include oral diet, tube feeding, intravenous (IV) nutrition, or a combination of these methods. The RD is available to discuss nutrition needs with you.
- **Respiratory Therapists:** The respiratory therapist will manage your oxygen, breathing treatments and other respiratory needs. You may need aid from a breathing machine (ventilator) if your injury is severe.
- **Case Managers and Discharge Planners:** Case managers will work with you, your family and your insurance company. They make sure there is a smooth transition from the hospital to home or to rehabilitation.

- **Social Workers:** A hospital stay can create hardship for you and your family. Social workers help with financial, social and mental health concerns. They identify helpful services in the community.
- **Child Life Specialists:** The child life specialist helps children and their families maintain a sense of normalcy through play, self-expression, music and peer interaction. They can help children cope with procedures and dressing changes.
- **Chaplains:** Chaplains can help with the spiritual and religious needs of you and your family. A chaplain is always available.
- **Acute Wound and Burn Clinic Staff:** You may be referred to the Bronson Burn Clinic when you leave the hospital. Clinic staff will assess your progress and give follow-up care. This could include dressing changes and pressure garments. You and your family will receive continued support and treatment. The burn clinic staff will teach you how to do burn care at home.
- **Pharmacists:** Pharmacists specialize in dispensing drugs prescribed by doctors and providing information to patients about their side effects and use.

Burn Wound Care

How Is Your Burn Wound Treated in the Hospital?

When you are admitted to the hospital unit, your condition will be checked and stabilized. Breathing very hot air or smoke may cause damage to the breathing passages or to the lungs. You may need oxygen and a breathing tube to help you breathe. Intravenous lines (IV's) help to deliver fluids and medicines. Other machines are used to check your condition and provide therapy. Some of the machines can be noisy. The burn injury causes fluid to leave the blood vessels and build up in the burned area. This can lead to dehydration and shock. The doctors and nurses will try to keep you and your family informed of progress and treatment plans.

When you are stable, the burn wounds will be cleaned and then dressed with an antibiotic cream and bandages. Infection is the greatest danger for the burn patient. Germs may live in dead burn tissue. They could delay wound healing or cause a life threatening infection. Hydrotherapy or bedside wound care is done every day to remove dead tissue and clean the wound. You may need more frequent wound care for some areas or to reinforce the dressings.

Your visitors will be asked to wash their hands before entering your room. They may be asked to wear disposable gowns, mask, or gloves. People with a cold or any infection should not visit you. It is very easy for you to become infected if you have a burn injury. We may limit the number of visitors for this reason.

Surgical Debridement, Grafting and Donor Sites

Why do I need surgery?

Some burn wounds are so deep that your body cannot heal them on its own. Your doctor may take you to surgery to clean (debride) the deep burns of the dead tissue. Skin from an unburned area of your body will be applied to the burn wound. This is known as debridement and skin graft.

The skin graft is often “meshed” and stretched to cover a burned area larger than the donor site. The skin is stapled in place and covered with dressings to protect the new fragile graft as it heals. The graft begins to grow and take hold in about 48 hours. The bandage is left in place for about five days. By that time the graft should take hold. Movement, bleeding, infection and poor diet can interfere with the graft taking hold. We may limit your activity and apply splints during this time.

You will go back to surgery if:

- The skin graft is not successful.
- There is more dead tissue to be debrided.

The overall number of surgeries depends on the extent of the injury.

Donor Skin for the Skin Graft

The skin the doctor will take from you for the skin graft is called donor skin. The area he takes the donor skin from is called the “donor site”. The most common donor sites are the thighs and the buttocks, although other areas of the body may be used.

The doctor uses a special instrument to remove a very thin layer of your skin. The donor site will look like an even, square or rectangular, raw scrape. The donor site is covered with a clear dressing. This dressing protects the donor site and helps reduce the pain. It is normal for dark red drainage to collect under the dressing. The dressing usually stays in place for two to seven days. It can be replaced if needed.

Most donor sites take between seven and 21 days to heal. Healing time depends on the size and location of the donor site and on your age and health status. You will no longer need dressings when the site is covered with new pink skin and no longer feels moist. You can apply a fragrance free moisturizer three times a day as needed. Use sunblock when the donor site is exposed to sunlight until the natural skin color returns.

Burn Wound Care After You Leave the Hospital

How do I care for my wounds when I go home?

Even though burn wounds appear healed on the surface, they will continue to heal for one to two years. Your burns, grafts and donor sites will change in color and texture as they heal. The amount of change and the time it takes will vary from person to person.

Discoloration:

In the beginning, healed areas are deep pink or purple in color. This is normal healing and will fade in time. The time it takes for your skin to return to its natural color depends on your normal coloring and the depth of your burn. Normal coloring generally returns more quickly in second-degree burns. Burns of greater depth and skin grafts may result in permanent color change. The color of grafted areas may vary because your skin is not the same color from one area of the body to another. The graft remains the same color as the donor site. Special make-up can be used to match the healed area to your normal skin color.

Check with your doctor to be sure the burns are completely healed before using any make-up.

Scarring:

There will be scarring in any severe burn injury. The extent of the scarring will vary from person to person. Scars from deep second or third degree burns will continue to change for up to two years. Some scars thicken and overgrow. This can limit your movement and can also affect body image. These scars may need more surgery. Skin grafts have a different texture. They can also thicken and overgrow.

Skin Care:

Good skin care is important to scar control. You should continue to follow the program of exercises, splinting, pressure garments and skin care that you started in the hospital. Your newly healed burns, grafts and donor sites are dry, thin and fragile and can break easily. Special care and protection is needed until these areas toughen. Good skin care will:

- Decrease dryness and increase comfort.
- Encourage healing of open areas.
- Protect healed areas and increase durability.

Bathing:

Washing every day removes dirt, perspiration, loose skin, drainage and any medicines or creams. It prevents skin damage and infection. Limit your bathing to 15-20 minutes. Soaking in the tub draws oils from your skin and can cause dryness. You may shower or wash up at the sink. Be sure to test the water temperature. Your newly healed skin is very delicate and can be injured if the water is too hot.

Gently wash any open wounds first by using a clean, soft washcloth and a mild, gentle soap such as: Ivory, Dial, Dove or Neutrogena. Use an antiseptic soap only if your doctor prescribes it. These soaps may be very drying and can irritate your skin. Do not use heavily perfumed soaps, or soaps containing deodorant or oils. Be careful not to rub too roughly. Leave scabs or crusts over small-unhealed areas intact. Finish washing as you normally would. Rinse well and pat dry with a clean towel. Clean the bathtub or shower before and after use.

Check for Infection:

Call your doctor or the burn clinic if your healed areas:

- Hurt more instead of less.
- The skin around it looks redder.
- Are warmer than normal and swollen.
- Have a change in drainage (increased amount, change in color, bad odor)

Dressing Changes:

Your nurse will show you how to change your dressings at home. It will help if you get everything ready before you start changing your dressing. Put down a clean towel to work on. Have your dressing supplies open. Have clean scissors on hand if you need them.

Infection is still your biggest concern. The best way to prevent infection is:

- Keep everything clean.
- Wash your hands thoroughly with soap and water before you touch the burn.
- Any linen that touches the burn should be fresh from the laundry. It should not be reused until it has been washed again.
- Dressing materials should be stored in their own packages and touched as little as possible.
- Leftover supplies should be returned to their clean packages and closed securely between uses.
- Dispose of the used dressings carefully to prevent infecting others.

You can have your dressings changed at the clinic until you and your family feels comfortable with changing them at home.

Burn Pressure Garments:

Compression garments help to soften scars and grafts, prevent overgrowth of scar tissue, and reduce itching.

Pressure is applied using ace bandages, Tubigrip or a custom-fitted, made-to-measure pressure garment. Depending upon the size and location of the burn, this garment may be a vest, sleeve, leggings or an entire suit. Facial compression is done using an elastic mask and hood (looks like a ski mask) or a clear hard plastic mask that attaches in the back with straps. Healed neck burns are supported by collars or an elastic chinstrap. Hands require special gloves. You may need one of these pressure garments or a combination of garments.

You must wear your pressure garments at all times for the best cosmetic appearance and best movement. Scar tissue will take one or two years to mature. You should expect to wear the pressure garments for all, or most of this time. As you improve your doctor will follow your progress and change your wearing schedule. We advise wearing the pressure garments 23 out of 24 hours, removing them only for bathing and skin care. If you have blistering after exercising in your pressure garment, you may remove it before you exercise, then reapply your lotion and garment afterwards.

Burn and Wound Clinic staff will take your measurements for a garment fitting. Your pressure garment is custom-made and should fit like a second skin. It should not cause you pain. Newly healed areas or jointed areas may be tender. If the garment irritates these areas, you may pad

them with a soft thin dressing. Do the same for any blisters that develop. You may notice that after wearing your garment for several hours, the color of the healed areas may turn darker, even purple. This is a natural reaction to the pressure and is not a cause for concern. Contact your doctor or the Burn and Wound Clinic if you have:

- Swelling, numbness, tingling.
- Loss of sensation.
- Discomfort.

A second set of garments will be ordered by clinic staff when they determine that the first set fits.

- **Care:** Wash your garment every day by hand in warm water and a mild detergent. Do not use bleach. This will damage the elastic. Soak the garment for 10 minutes and rinse well. Roll in a towel to remove excess water and lay flat to dry. Do not dry in the sun, a dryer or on a radiator, or your garment will shrink.

Your elastic garment will stretch slightly over time. A weight loss or gain of 10 to 15 pounds or more will alter the fit of the garment and reduce its effectiveness. You may need to be measured for a new garment.

- **Guarantee:** Because of changes like an increase in muscle bulk, increase or decrease of edema and weight, and rapid growth of children, garments may not fit when they arrive. If the garment does not fit, it will be replaced.

Always wear your garment when you go to your doctor appointment. Call the Clinic with any questions about your garment. You can call Monday through Friday, from 8 a.m. to 4:30 p.m.

Splints: Scars that thicken and overgrow can cause shortened, tight bands across your joints. This results in limited motion, limited function and deformity. You may need specialized splinting. This will help to decrease scarring, prevent deformity and reduce the need for extensive reconstructive surgery. Splints will also apply some pressure to smooth and flatten the scars. Keep splints clean with lukewarm water and soap or alcohol. Do not leave splints in direct sunlight or near heaters or they will lose their shape. Call your rehabilitation therapist if the splint rubs, pinches, or leaves a bruise or blister.

Common Concerns

Dry, Itchy Skin: The newly healed skin lacks natural oils. Oil producing glands have been damaged or destroyed by the burn injury. Your skin will be dry, scaly, and itchy and may crack easily. You must apply lubricating lotions to prevent this and the discomfort it causes.

Apply lotion lightly to avoid clogging the pores. Apply up to and around any open areas. Work the lotion in until it is completely absorbed. Gently massage as you apply the lotion. This will help keep scars soft and flexible. Re-apply two to three times a day including after your bath and before bed to keep the skin moist and supple. Use a lotion that does not cause stinging or irritation to your skin. Avoid lotions that contain a high content of perfume, lanolin, alcohol, mineral oil, or a vitamin E. These ingredients can break down the elastic in your pressure garments. They can strip the skin of its natural oils; clog pores, cause an acne-like condition, dehydration and blistering. Read labels or ask your doctor, pharmacist or burn nurse if you are in doubt about any products. Lotions that are well tolerated include: Eucerin, Lubriderm, Aloe Vesta Lotion, Keri Lotion, and Third-Step Gel. Lotions alone may not relieve your itching. You may need to ask your doctor for “itch medicine.” If you scratch, you may tear open your newly healed skin and create new wounds.

Blisters: Friction against the thin, newly healed skin creates blisters. Clothing, bed linen, your pressure garments and other sources of pressure or rubbing can cause blisters. Don't wear tight-fitting clothes or those made of rough fabric. You may want to remove your pressure garments before doing your range-of-motion exercises to prevent blistering as you move. Re-apply your lotion and pressure garment when you are done exercising.

Small blisters may be drained and flattened with a small dressing. These areas will dry, crust and heal without problems. Larger blisters may need to be removed, leaving open areas. These should be cleaned and dressed like other open wounds. Let your doctor or clinic nurses advise you about these areas. As your skin matures, blisters will be less of a problem.

Bruises: Your new skin can bruise easily. For the first few months, you should protect yourself against bumps and sharp objects. Wear long pants, long-sleeved shirts, gloves, shoes and socks. As your skin heals, it becomes tougher, and bruising will be less of a problem.

Circulation Changes: After skin grafting, you may notice a change in color and some discomfort in your arms and legs. This is due to a circulation disorder that will correct itself in a few months. Here are some steps you can take to reduce these problems.

If you have discomfort while standing, you can reduce this by walking rather than standing in one place. When you sit, color change may increase and your feet and legs may tingle. To relieve this, prop your feet up. If your feet and legs swell, it helps to prop your legs up on pillows while you sleep. Your pressure garments will support the circulation in your legs and reduce the swelling and discomfort.

Your arms and hands might tingle and change color when they hang at your side. You can prevent this by raising your arms above your heart. Prop your arms and hands on pillows when sitting or sleeping. Moderate exercise, including household chores and walking will help improve circulation and reduce discomfort. Wearing your pressure garments also helps.

Extreme hot or cold temperatures can damage skin. Sometimes with deep burns and grafts, you lose the ability to sense the temperature of things. Be aware of hot and cold things and avoid contact with your burned skin. Some examples of items to protect against are:

- Open flames.
- Ice, ice bags and snow.
- Hot bath water, hot water bottles.
- Hot vinyl car seats, heating pads or electric blankets.

If you are not sure about the temperature of something, ask someone else to check it for you.

Cover your burns with protective clothing when you are in the sun. Wear a wide-brimmed hat to protect your face and neck. Use a sun block with an SPF of 25 or greater for exposed skin. Re-apply it frequently. If burns cover a large surface area of your body, you may not be able to perspire. In very hot weather, stay inside and avoid vigorous activity.

Wear layers of warm, protective clothing to shield your skin from the cold and wind. Numbness and tingling in your face, hands or feet, may be a sign that your burns are not protected.

Chemicals: Harsh chemicals can harm newly healed skin. If you have hand or arm burns do not handle chemicals, gasoline, paint thinners or strong cleaning solutions. If you do handle chemicals, carefully rinse the area with water.

Cosmetics: Some cosmetics can irritate new skin. Choose mild, non-irritating, non-perfumed products. Some examples are: Clinique, Shiseido and Almay. Do not use cosmetics that contain alcohol, lanolin or mineral oil. Men with healed face burns should avoid alcohol-based shaving creams or after-shave. They can dry and irritate the skin. To control perspiration use a light dusting of talcum powder or cornstarch.

Hypersensitivity: New skin is tender and sensitive to touch. Good skin care will help toughen these areas.

Pain: By now, the worst is over, but you may still have some discomfort. Try to find something to keep your mind occupied until your pain medication has time to take effect. Get plenty of rest. Schedule busy times to alternate with rest breaks. Increase your activity slowly. Exercise is important to your recovery, but must not be overdone.

Follow-Up Care

Your doctor will see you at regular intervals after you leave the hospital. Skin care and scar control are major concerns. Working with your doctor, nurses and therapists you can prevent and correct problems.

Rehabilitation

You may have a rehabilitation therapist work with you while you are in the hospital. An occupational therapist (OT) may work on your ability to wash and dress yourself. A physical therapist (PT) may work on your strengthening and walking. Both PT's and OT's will work on

your range of motion. This is important so that you can walk and care for yourself. A speech therapist may evaluate your ability to talk or eat. The therapists work as a team to help you achieve your goals of independence and level of function

After you leave the hospital, you may need to stay at an inpatient rehabilitation center or a skilled nursing home until you are better able to care for yourself. You will have therapy often, sometimes more than once a day. You may still need therapy when you go home. Therapy can be provided in your home or at outpatient therapy. Outpatient therapy is the last phase of your therapy. It focuses on what you need to achieve to return to work, past living arrangements, or hobbies. The goal is to make you as independent and as close to your previous state of health as possible. If there are things you can no longer do, therapy can help you find ways to work around your new injuries or problems.

If you still need wound care at the clinic, your therapy appointments can be coordinated with your clinic appointments. If you are coming in for multiple appointments remember to bring snacks, your pain medicine and loose fitting clothing.

Range of Motion Stretching

Range of motion (ROM) is a term that describes how far a body part or joint can move. Range of motion can either be active (you are moving), or passive (someone else moves the patient). While you are in the hospital and unable to move on your own, a nurse, nursing assistant, occupational therapist or physical therapist will help you. The staff will encourage you to help as soon as you are able. Family members can also help after instruction from the staff.

Range of motion exercise stretches the burned skin to its longest state. You need this for full movement of the burned area. Stretching of the skin is needed until the burned area is fully healed or you gain full active range of motion. This can take up to a year. These stretches can be uncomfortable and one of the hardest parts of burn recovery. There are a few things that can make range of motion stretching more favorable. Arrange pain medication schedules so your pain is controlled with stretching. In the hospital, your OT or PT will try to arrange treatment with pain medicines. Moving more frequently and using your splints as scheduled will reduce the pain of stretching.

Stretching is most effective when done slowly until the scar blanches, or turns lighter in color. When this point is reached hold the position until the discomfort improves or the color starts to return. This may take up to five minutes. After this, continue into the stretch using the same technique until full range of motion is reached. If dressings hide the scar, use the same technique and hold the stretch when it becomes uncomfortable. If a burn covers more than one joint stretch multiple joints at the same time so the skin can stretch to its furthest point. For example, if the elbow and the armpit are burned, raise your arm as far as you can above your head while keeping your elbow straight.

Range of motion and stretching must be done frequently while you are awake. This helps to prevent your burned areas from losing movement and feeling tight. Both in the hospital, and at home, stretching the burned areas should be done every two to three hours. Your doctor, OT or PT will advise you and recommend when you can reduce the frequency of range of motion.

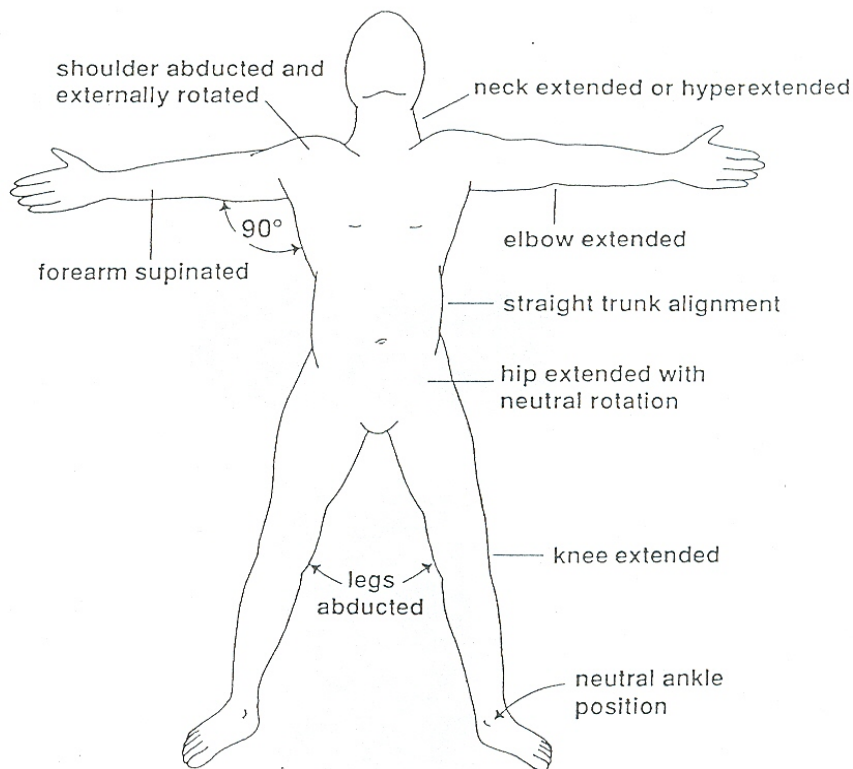
Positioning

Burned areas “freeze up” if they are not positioned correctly. The best way to prevent loss of motion in your joints and skin is to:

- Move your joints and skin frequently.
- Position them opposite the position of contracture when you are not moving.

For example, if you are burned on the front of your neck, the wound will want to pull your neck and chin down toward your chest. If you are not positioned with the neck back or extended, you would no longer be able to look up without more surgery to correct the problem.

Look at the chart for the correct position for your burns. Talk with your therapist about positioning specific to you. Positioning is important 24 hours per day.



POSITIONING THE BURN PATIENT

Splints

A splint helps keep a body part in a certain position so the skin and joint will not get tight. Your doctor will order splints applied by a therapist. The position of comfort is also the position of contracture (freeze up). You wear the splint according to a schedule. It will be on for a period of time, then off to complete range of motion stretches and daily activities. Ask your therapist for your schedule. Pressure garments and dressing can be worn under your splint. Tell your therapist if you see any redness, skin changes or have increased pain from wearing your splint.



Scar Management

Burn wounds or grafted areas often form scars. These areas can be red and raised. You can take steps to reduce the redness and stop the scar tissue from limiting your range of motion. You can use ace bandages, Tubigrip or pressure garments to flatten and stretch the scar. These areas should be massaged. Apply lotion to the area first so the skin does not break open. Place your finger or thumb on the scar. Rub side to side, up and down and in circles. Your finger or thumb should stay in contact with the skin at all times. Press hard enough so the skin blanches or turns white. Massage areas that are red and raised three to four times per day. This will feel uncomfortable but will get better within a few minutes of stopping the massage. The more often you massage, the less uncomfortable it will become.

Your therapist may add silicone or gel inserts to your scars or inside your garments. Follow their recommendations for use, and call your therapist if you have questions.

Movement

Moving around in the hospital and at home is important to your recovery. Unless you have been told not to move a part of your body, it should be moving. You should be walking, with good protection over your wounds, three to four times per day, not counting trips to and from your bathroom. You should be using your arms and hands to do as much for yourself as you can. A wheelchair should only be used in bad weather, for extremely long distances, or when you have been told to stay off your feet by your therapist, nurse or doctor.

You will be sore and stiff when you wake up in the morning. This is because you have kept the burned areas of your body still during the night to prevent pain. Once you get yourself moving the pain will ease. The more you move the less of this “initial stiffness” you will experience.

Your therapist may prescribe using a walker or crutches to help manage your pain. You may only need to use the walker a short distance until the muscles in your legs begin to pump blood more efficiently, reducing the initial pain. Some people wrap their legs with ace bandages in the shape of a figure eight to make walking less painful. Your therapist will show you how to do this or do it for you.

Activities of Daily Living (ADL)

Dressing, bathing, eating, work and play are all activities of daily living. A therapist will work with you to help you regain independence in these areas. If a task is difficult the therapist may recommend a special piece of equipment to use temporarily. You should stop using the devices when your range of motion improves. Your family will want to help you do things that you did by yourself before this injury. You should do as much for yourself as possible. This is important for your emotional and physical recovery. This will help improve your range of motion and strength and allow you to more quickly return to doing it on your own.

Pediatric Burn Rehabilitation

Children respond to burn recovery differently than adults. Children cannot always understand why it is so important to do something that is uncomfortable. If you are the caregiver, it is important to establish a stretching schedule. Everyone who is a caregiver should communicate the same message. It can be confusing to a child if one caregiver enforces the range of motion stretches and another does not.

There are a few strategies that can make rehabilitation easier for the child. Encourage physical play whenever possible. This will promote mobility and strengthening. You can include games or specific suggested activities into the range of motion routine. This will make it fun for the child and distract him from movement. Explain to your child on his or her level what you are doing and why it is important. For example, “I am going to help you move your arm up. I am going to hold it up for a count of 10. This is going to help you have better movement so you can play basketball again.”

Your therapist will give you instruction on range of motion stretches. During these stretches counting or distraction through a favorite song or TV can be helpful. A reward system can help a child decide to do stretches. Talk with your therapist for suggestions or if there are problems.

Nutrition

Well-balanced nutrition is important for wound healing. The food you eat will help your body heal and fight infection. Increased amounts of protein, vitamins and minerals are important in healing. A dietitian may help to design a diet plan that is specific to you. Below are some general recommendations for a healthy diet.

You may be encouraged to drink nutritional supplements in addition to your regular diet. Water, pop and juice should be limited, as these have little nutritional value.

You may need a feeding tube if you are not able to meet your nutritional needs by eating. When you leave the hospital your diet should continue to include foods from the main food groups; grains, dairy, protein, fruits and vegetables. In addition to eating well, continue to take a daily multivitamin with minerals. A nutritional supplement (Pediasure or Boost) may be recommended if you are not able to get enough calories or protein with foods.

Grains: Bread, rice, cereal, pasta, crackers. Four or more servings every day.

Dairy: Cheese, yogurt, ice cream, pudding. Four or more servings every day.

Protein: Beans, nuts, peanut butter, eggs, meat, chicken or turkey and fish. Four or more servings every day

Fruits and vegetables: Fresh, frozen or canned. Four or more servings every day. Limit juice to no more than 8 oz a day. Drinking too much juice may limit your appetite.

To help meet your bodies increased nutritional needs, consider:

- Eat three meals and three snacks every day
- Add fats (butter, margarine, sour cream) to your food.
- Add powdered milk or cream to hot cereal, cream soups and mashed potatoes.
- Sprinkle shredded cheese on scrambled eggs, casseroles, and macaroni and cheese.
- Blend yogurt or ice cream and fruit together to create a fruit smoothie.

Pain Control

Burn wounds are painful. Your therapies can also cause pain, stretching, or discomfort. Your doctor will prescribe medicines and creams to help reduce your pain and itching. Some of the medicines used are opioids or narcotics. These medicines vary in their strength and length of effect. You should only take these as directed by your doctor and nurses. These drugs can make you drowsy and unable to concentrate. You should not drive or operate machinery while you are taking these drugs. They can also cause constipation, nausea, loss of appetite and increased tolerance over time. Tolerance means your body becomes less responsive to a particular type and dose of medication. Some of these medicines have a maximum safe dose. Do not take more than your regular dose unless your doctor says this is OK.

Good pain management does not mean you will become addicted. Physical dependence to an opioid or narcotic may occur. You may need to have your pain medicine reduced or tapered over a month or several months. This depends on your pain management needs and the dose you have been taking. Our Clinic staff and your burn doctors will monitor this tapering. Tell them if your pain is not being relieved with each dosage change. Do not stop taking these medicines suddenly. You may trigger withdrawal symptoms. These symptoms may include, nervousness, irritability, sweating and high blood pressure that could cause a seizure. Call your doctor right away if you have any of these symptoms.

Itching

As the burn wound heals, many patients experience itching and dryness of donor and grafted areas. These areas do not produce the necessary oils to lubricate the skin. The oil-producing glands have been destroyed from the initial injury. Apply a thin layer of moisturizing lotion several times a day to prevent maceration (softening or thinning) of the newly healed skin. Do not use lotions and soaps that have perfume or alcohol. They can dry the skin. Topical colloidal oatmeal baths may be effective. Other effective measures include:

- cool showers or baths
- patting or massaging the affected area gently
- eliminating alcohol and caffeine

Your doctor may prescribe an anti-itch medicine, such as hydroxyzine (Atarax), certizine (Zyrtec), doxepin cream (Prudoxin®), diphenhydramine hydrochloride (Benadryl), or local anesthetics (EMLA). All of these treatments reduce post-burn itch.

Emotional Adjustment

In the Hospital

A burn injury is a sudden, frightening and life-changing event for patients and their families. Patients and families often experience loss and change in their lives. Burn patients must often cope with daily discomfort with dressing changes, exercises and positioning. They may face changes in their body appearance and function. Each person copes with the stress of injury and hospitalization in his own way. You may experience feelings of fear, sadness, anger, frustration, and anxiety as you face these challenges. Your feeling of well-being may improve with periods of rest, visits from family members or friends, and over time with improved wound healing and a restoration of function.

Family members or friends need to care for themselves during the your hospital stay. This includes taking time to eat, rest and take breaks from the hospital. Family members may experience a change in roles such as handling financial affairs and home life. These role changes may cause anxiety and frustration. If you are a caregiver be sure to ask for help from other family members and friends. This includes help with transportation, childcare, errands or just someone to listen.

Our team is here to help and to encourage you through this journey. The doctors, nurses and pharmacists can help patients develop a pain management plan. Our chaplains are great resources for social, emotional and spiritual support. Medical social workers and discharge planners can help answer insurance and financial questions and help with the plan for after discharge care. Child life specialists help children adjust to stress through activities and play.

Going Home

Adults: Going home is an exciting event. It is time to begin a new step in your recovery. The change from hospital to home is part of your recovery. Emotional adjustment, just like physical recovery, continues when you leave the hospital. Periods of mood swings, “ups and downs”, are common. You are going home with changes in the way your body looks and works. You have

had an experience that others may not understand. Adjusting to the changes and rejoining your family's day-to-day life may be more frustrating than you had anticipated. Simply being aware of this should help you deal with it more easily.

You may have anxiety and feelings of depression about your appearance. It is normal to be concerned about your appearance and how others will react. Your skin will continue to heal. You and those around you will become accustomed to the changes in your appearance. As time passes you will become less sensitive to the reactions of strangers. The feelings you have about your appearance are normal, and important. Be open about these feelings with those who are close to you.

The key words to remember are “patience” and “understanding.” Have patience with:

- Yourself. You are still adjusting to many changes.
- Your family and friends. Sometimes they become confused as to how to help you. They are also trying to adjust to the changes.
- Make an effort to understand not only your own behavior and feelings, but also those of the people around you.

The more you understand your feelings and behavior, the easier it is to gain control of them. There are some online resources for people to network with other burn survivors and their families. See the resource page for the web sites.

Some people may experience Post-Traumatic Stress Disorder (PTSD). It can be treated with medicine and therapy. For most people with PTSD, symptoms start within three months of the event, but some people do not experience symptoms until years later. Children can also have PTSD. Signs of PTSD include:

- nightmares and scary memories of the event
- feeling jumpy and very upset when something happens without warning
- trouble sleeping
- muscles are tense
- avoiding places that remind you of the event
- difficulty trusting or feeling close to other people
- getting angry easily
- depression.

You can feel better. If you are having these or other symptoms, call your doctor. Your doctor can refer you to someone who is specially trained to treat people with PTSD.

Children: It is especially exciting when a child is able to go home after a long hospital stay. To make the change from the hospital to home as easy as possible, parents or guardians should be aware of the adjustment period that will take place.

A child needs extra time and attention for physical and emotional needs. There may be some competition among siblings for attention. A child may need reassurance that her place in the family has remained intact despite her absence.

Seeing friends again and returning to school can be frightening for your child. She may look different now, and people will be curious. When your child's doctor says it is okay to return to school, people from the burn team (nurses, doctors, therapists, and child life specialists) can talk to teachers and classmates to educate them about experiences children have when they are burned. As a team, you, your child and staff can work together to set up a plan for any help your child might need when leaving the hospital. Please call the child life department or your medical social worker for more information.

Adolescents: Preteens and teen-agers have special needs and problems while adjusting when they leave the hospital. You are in a very busy, often confusing period of life when time-out for recovery can be frustrating.

There will be a period of adjustment after you leave the hospital. You will gradually be able to resume normal activities at home and in school. You will gradually be able to become involved with your friends. During this adjustment period you may feel discouraged or sad at times. You may want to avoid seeing friends or returning to school because of embarrassment about changes in your appearance. These are common feelings, not only among adolescents, but among adults as well. They will lessen with time as you gain strength and as your family and friends gain greater understanding of your burn. They will become accustomed to visible changes in your appearance. There are ways to make a burn injury less visible. Wigs, scarves and turtleneck sweaters can help. Talk to your doctor about special cosmetics.

Child life specialists, medical social workers and staff are available to help with your transition back to school. Bronson participates with local fire departments and other burn centers in Michigan to provide a special week of camp for kids ages 7-17. The camp is free. This camp is a safe, therapeutic setting that gives children with burn injuries the opportunity to meet kids like themselves.

There are also resources online that provide opportunity for networking with other burn survivors. See the resource page for these web sites.

Glossary of Equipment and Terms Used in Burn Care

Every patient is different. Your care will depend upon your needs and the severity of the burn injury. Here are some of the terms you may hear.

Arterial line: A small tube placed in an artery by a needle, used to draw blood and read blood pressure. It is usually placed in the wrist, groin or foot.

Autograft: A thin layer of skin taken from an unburned area of the patient's body and placed on the burned area. The layer of skin sticks to and covers the burned area.

Cardiac monitor (EKG): A machine that is attached to the patient's skin with special wires and pads. The machine checks how the body is working by keeping track of heartbeat and rhythm.

Circumferential: When a burn injury completely circles the torso, leg or arm.

Contracture: Tightening or pulling of skin in a band-like fashion that decreases movement.

Debridement: Removal of dead tissue from the burned area.

Donor site: An unburned area of the body from which the autograft or skin is taken to place on the burn wound.

Dressing change: Removal of the old bandages and applying new bandages to the burn wound.

Edema: Swelling. Swelling is often seen around the burn wound or through the whole body if there is a large burn. It may take days to weeks for swelling to go down.

Eschar: A layer of dead, burned tissue.

Eshcarotomy: The process of cutting through burned skin to allow for more circulation of blood.

Feeding tube: A small tube passed through the nose (nasogastric, or NG tube) or mouth (orogastric, or OG tube) and down into the stomach or small intestine. Used to provide nutrition, or tube feeding. If tube feedings are needed for a longer period of time, a tube may be placed directly into the gastrointestinal (GI) tract through the abdomen (percutaneous gastrostomy tube, or PEG).

Urinary catheter: Often called a Foley catheter. A tube inserted into the bladder through the urethra used to drain, observe and measure urine output.

Homograft: A thin layer of skin taken from a cadaver and placed over a burn wound after debridement. It acts as a temporary, artificial skin until an autograft can be placed.

Hydrotherapy: A bath in a tub used to clean the wound and soften eschar in order to aid in healing.

Hypertrophic scars: These scars are usually seen after severe burns that heal on their own or sometimes after skin grafting. They are large raised scars caused by too much protein in the skin. They often have to be surgically removed or have skin grafts placed over them for better healing. These scars can be reduced by the use of pressure garments.

Intravenous (IV): A very small plastic catheter placed into a vein. It is used for rapid administration of medicine and to give fluids. Sometimes a central line (a special catheter with several ports) is placed into one of the larger veins in the body usually the neck, chest or groin.

Central lines allow for closer monitoring of the patient. These lines give nurses more ways to give medicines and blood products.

IV pumps: A machine that helps give patients their medicines and fluids. Nurses use pumps to adjust the flow medicines or fluids.

Intubation: A process of placing a breathing tube (endotracheal tube) into the trachea (main airway) in a patient who is having difficulty breathing.

Narcotics: Drugs that relieve pain.

NPO: Latin abbreviation for “nothing by mouth”. You should not eat or drink. Typically this happens the night before surgery or for patients on ventilators.

Oximetry: A monitoring device that measures oxygen in the body. The device may be placed on the earlobe, finger or toe.

Passy-Muir speaking valve: A device placed on the end of the tracheostomy tube that may allow the patient to speak.

Pressure garments: Snug fitting, stretchy clothing that helps prevent swelling and contractures. It helps to create smooth skin after grafting. They are to be worn 23 hours a day, usually for a year or more.

Range of motion: Exercises to increase joint movement, elongate skin, and preserve function.

Skin grafting: A surgical procedure where a thin layer of skin (autograft) is taken from an unburned part of the body and placed on a burn wound.

Splint: A device used to maintain a body part in a fixed position to help elongate skin.

Take down: Typically the first dressing change after a skin graft. The burn surgeon about the fifth day after skin grafting to check for graft “take” or healing usually performs the take down.

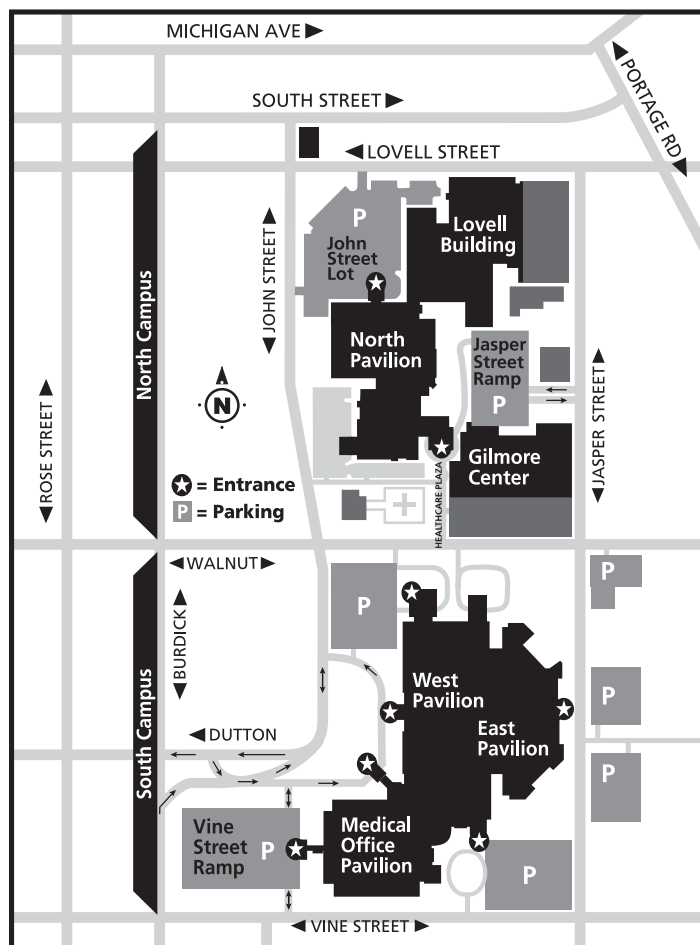
Tracheotomy (Trach): A cut made into the neck that allows a tube to be placed into the lungs to help the patient breathe. Sometimes a “fenestrated” tracheotomy tube is used. This lets the patient to breathe out over their vocal cord, allowing them to talk.

Ventilator: (Vent or breathing machine) a machine used to help the patient breathe. It is attached to an endotracheal tube or tracheostomy tube and. The machine provides oxygen to help the patient breathe.

How Kids Hear Hospital Words

Kids have active imaginations. You may say or hear words every day that are familiar to you. A child may tap into his or her imagination to understand what those words mean. The examples show you how differently some words can be perceived by a child and some simple terms to explain them.

WORD	SOUNDS like...	It really is...
IV	A plant (Ivy)	Medicine going through a plastic tube into your vein
Dressing change	Changing your clothes	Putting on a new bandage
NPO	A new way to spell "No"	Nothing to eat or drink
Skin Graft	Makes a graph with lines	A thin piece of healthy skin that goes over the burned area to help it get better



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